Five-Year Review Report

Second Five Year Review Report

for

NCR Corporation Superfund Site

Millsboro

Sussex County Delaware

June, 2005

PREPARED BY

U S Environmental Protection Agency
Region III
Philadelphia Pennsylvania

Approved by

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Director
Hazardous Site Cleanup Division

Date

6/27/05

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Five-Year Review Report

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List of Acronyms

AOC	Administrative Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirement
AS/SVE	Air Sparging / Soil Vapor Extraction
CD	Consent Decree
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of Concern
DMI	Dennis Mitchell Industries
DNREC	Delaware Department of Natural Resources and Environmental Control
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Difference
GWMZ	Ground Water Management Zone
IRM	Interim Remedial Measure
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
NCR	National Cash Register
NCP	National Contingency Plan (the National Oil and Hazardous Substances Pollution Contingency Plan)
NPL	National Priorities List
O&M	Operation and Maintenance
P&T	Pump and Treat
PCE	Tetrachloroethene
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SDWA	Safe Drinking Water Act

Trans 1 2 DCE	Trans 1 2 dichloroethene
TCE	Trichloroethene
UAO	Unilateral Administrative Order
VOC	Volatile Organic Compound

Executive Summary

The remedy for the NCR Corporation Superfund Site in Millsboro Delaware includes the pumping of contaminated ground water that is then treated by running it through an air stripper, which removes volatile contaminants from ground water by blowing air through the cascading water Treated water is then recirculated through infiltration galleries that allow it to percolate back into the ground After the successful implementation of air sparging and soil vapor extraction in the Phase II parcel of the Site (across the railroad tracks), this same technology was implemented to enhance the existing pump and treat system in Phase I (near the on-site buildings) The cleanup of Phase II was completed in 2002 The cleanup of Phase I is ongoing

The site achieved construction completion with the signing of the Preliminary Close Out Report on September 27, 1996 Institutional controls for the Site are in place, in the form of a Delaware Ground Water Management Zone (GWMZ), which prevents the installation of any new ground water extraction wells in the vicinity of the contaminated ground water (a non significant change to the ROD documented this and eliminated the requirement for deed restrictions in 2000) A vapor intrusion model created for the Site in 2003 indicated that no unacceptable risks would occur in a hypothetical residential structure, even if one were built over the highest areas of contamination The trigger for this five year review was the previous five-year review report signed on March 31, 2000

The assessment of this five year review found that the remedy was constructed in accordance with the requirements of the Record of Decision (ROD, 1991) Two Explanations of Significant Difference (ESD, 1996 and 1998) were issued to change the remedy design (permitting air sparging and soil vapor extraction to be used in lieu of pump and treat for Phase II and adding it to enhance the existing pump and treat for Phase I) A Non Significant Change was documented in 2000, altering the approach called for in the ROD for implementing Institutional Controls (eliminating the requirement to place deed restrictions due to the existence of a Delaware GWMZ) The remedy is functioning as designed and is expected to be protective when ground water cleanup goals are achieved through treatment, which is anticipated to require 30 years

The remedy is considered protective of human health and the environment in the short term as the ground water is captured on-site and treated Any ground water leaving the Site meets the drinking water standards for TCE before entering the Iron Branch Creek Surface water and sediment samples are collected from Iron Branch Creek annually Domestic wells on the other side of the Iron Branch Creek are sampled annually for TCE The State of Delaware has designated a Ground Water Management Zone for the Site which prevents the future installation of ground water extraction wells in the vicinity of the Site

Long-term protectiveness of the remedy is expected to be achieved through the continued operation of the treatment systems Some additional actions will be necessary to address the source area recently discovered in the vicinity of the northeast corner of the Phase I area of the Site Sampling and monitoring of ground water, surface water, sediments, and domestic wells is expected to continue until cleanup goals are met

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Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name *(from WasteLAN)* NCR Corporation Superfund Site		
EPA ID *(from WasteLAN)* DED043958388		
Region 3	**State** DE	**City/County** Millsboro / Sussex County

SITE STATUS	
NPL status ■ Final □ Deleted □ Other (specify)	
Remediation status (choose all that apply) □ Under Construction ■ Operating □ Complete	
Multiple OUs? □ YES ■ NO	**Construction completion date** 9/27/1996
Has site been put into reuse? ■ YES □ NO	

REVIEW STATUS	
Lead agency ■ EPA □ State □ Tribe □ Other Federal Agency _____	
Author name Matthew T Mellon	
Author title Remedial Project Manager	**Author affiliation** U S EPA Reg 3 HSCD
Review period 8/31/2004 to 6/29/2005	
Date(s) of site inspection 3/2/2005 and 3/21/2005	
Type of review ■ Post SARA □ Pre SARA □ NPL Removal only □ Non NPL Remedial Action Site □ NPL State/Tribe lead □ Regional Discretion	
Review number □ 1 (first) ■ 2 (second) □ 3 (third) □ Other (specify) _____	
Triggering action □ Actual RA Onsite Construction at OU #____ □ Construction Completion □ Other (specify)	□ Actual RA Start at OU#____ ■ Previous Five Year Review Report
Triggering action date *(from WasteLAN)* 3/31/2000	
Due date *(five years after triggering action date)* 3/31/2005	

["OU refers to operable unit]
[Review period should correspond to the actual start and end dates of the Five Year Review in WasteLAN]

Five-Year Review Summary Form, cont'd

Issues

1 New source area confirmed
2 Repair needed for main blower of air sparging system

Recommendations and Follow up Actions

1 Develop strategy for new source area
2 Repair main blower of air sparging system

Protectiveness Statement(s)

The remedy is considered protective of human health and the environment in the short term as the ground water is captured on site and treated Any ground water leaving the Site meets the drinking water standards for TCE before entering the Iron Branch Creek Surface water and sediment samples are collected from Iron Branch Creek annually Domestic wells on the other side of the Iron Branch Creek are sampled annually for TCE The State of Delaware has designated a Ground Water Management Zone for the Site which prevents the future installation of ground water extraction wells in the vicinity of the Site

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Other Comments

N/A

Five-Year Review Report

I Introduction

The purpose of the five-year review is to determine whether the remedy at a Site is protective of human health and the environment The methods, findings, and conclusions of reviews are documented in five-year review reports In addition, five-year review reports identify issues found during the review, if any, and recommendations to address them

The United States Environmental Protection Agency (EPA) is preparing this five year review report pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) § 121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) CERCLA §121states

> *If the President selects a remedial action that results in any hazardous substances pollutants or contaminants remaining at the site the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented In addition if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106] the President shall take or require such action The President shall report to the Congress a list of facilities for which such review is required the results of all such reviews and any actions taken as a result of such reviews*

The Agency interpreted this requirement further in the NCP, 40 Code of Federal Regulations §300 430(f)(4)(ii) states

> *If a remedial action is selected that results in hazardous substances pollutants or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action*

The United States Environmental Protection Agency Region 3 has conducted a five-year review of the remedial actions implemented at the NCR Corporation Superfund Site in Millsboro, DE This review was conducted from 8/31/2004 through 6/29/2005 This report documents the results of the review

This is the second five-year review for the NCR Site The triggering action for this review is the date of the first five year review, as shown in EPA's WasteLAN database March 31, 2000 The five year reviews at this Site were specifically activated because hazardous substances, pollutants, or contaminants currently remain on-site above levels that allow for unlimited use and unrestricted exposure

II Site Chronology

The table below summarizes important events and relevant dates in the chronology of the NCR Site

Table 1 Chronology of Site Events

Event	Date
Dennis Mitchell Industries manufactured shopping carts children s car seats and strollers	1965 1966
National Cash Register (NCR) manufactured mechanical cash registers	1967 1975
National Cash Register manufactured electronic terminal equipment	1975 1980
First National Bank of Maryland (now M&T Bank) conducts commercial banking operations	1981 Present
Initial discovery of problem or contamination	07/01/1981
Pre National Priorities List (NPL) responses	N/A
Trichloroethene (TCE) detected in ground water	1983
NPL listing	04/10/1985 Proposed 07/22/1987 Final
Removal actions	N/A
Interim Remedial Measure (IRM) installed pursuant to Remedial Investigation/Feasibility Study (RI/FS) Consent Order with the Delaware Department of Natural Resources and Environmental Control (DNREC) ground water recovery well and air stripper installed to contain plume	07/1988
Remedial Investigation/Feasibility Study complete	08/12/1991
Record of Decision (ROD)	08/12/1991
RODs Amendments or Explanations of Significant Differences (ESDs)	08/12/1991 ROD (P&T system in Ph I and in Ph II if RI shows warranted) 03/27/1996 ESD (AS/SVE in Ph II) 09/29/1998 ESD (add AS/SVE to Ph I) 03/21/2000 Non sig change (eliminate deed restrictions as GWMZ already in place)
Enforcement documents (CD AOC Unilateral Administrative Order)	03/1988 AOC (w/ DNREC RI/FS IRM) 03/31/1992 UAO (RD/RA) 02/28/2002 CD (Cost Recovery)
Remedial design start	08/04/1992 RD Phase I 07/26/1994 RD Phase II
Remedial design complete	09/16/1994 RD Phase I 04/10/1996 RD Phase II

Actual remedial action start	02/10/1995 Phase I 06/17/1996 Phase II AS/SVE
Construction dates (start finish)	02/10/1995 Start 10/1995 Phase I complete 09/1996 Phase II AS/SVE complete 01/1999 Phase I AS/SVE enhancement complete
Construction completion date	09/27/1996
In situ oxidation pilot test	2003
Additional sub surface investigations	01/ 2005
Previous five year reviews	03/31/2000 (First)

III Background

Physical Characteristics

The NCR Corporation Superfund Site (the Site) is located approximately one-quarter of a mile southeast of the intersection of Routes 113 and 24 in the town of Millsboro in Sussex County, Delaware (see Attachment 1) The Site includes a 58 acre parcel of land currently owned by M&T Bank (formerly known as First National Bank of Maryland) and formerly owned by NCR Corporation, and two adjacent parcels of unused land, which together comprise approximately 80 acres Railroad tracks separate the former NCR Corporation property from the unused portion of the Site (see Attachment 2) Phase I consists of the treatment of contaminated ground water west of the railroad tracks (near the bank building) and Phase II consists of the treatment of ground water east of the railroad tracks (which was completed in 2002)

A small stream, Iron Branch, borders the Site to the north and northeast The former NCR Corporation property is bounded to the east by Conrail railroad tracks and beyond this is an 80-acre parcel of agricultural land which is also part of the Site Mitchell Street forms the western boundary and to the south and southeast are a few residential structures a mobile home dealership, and another small stream, Wharton's Branch

Iron Branch and Wharton's Branch join approximately 1,500 feet east of the property and flow into the Indian River estuary approximately 4 500 feet east of the site Between Iron Branch and the Indian River, northeast of the Site, is a small residential community known as Riverview Approximately 500 feet west of the community is the Millsboro elementary school

The predominant surface water features in the vicinity of the NCR Millsboro Site are (1) Iron Branch, (2) Wharton's Branch and (3) the Indian River

Approximately eight residences lie within one block of the site to the west These residences, however, are not along the principal contaminant migration routes from the Site In addition, approximately 16 residences are located about 1,700 feet north of the Site boundary

These too are not located along principal contaminant migration routes The residences to the east-northeast are located in the Riverview community, approximately 4,000 feet from the building on the Site (see Attachment 1)

Public drinking water comes from ground water, with wells located a few miles to the north of the Site There are several private drinking water wells near the Site, several of which are included in an annual monitoring program, but no drinking water wells have been found to have been affected by Site-related contaminants to date

Land and Resource Use

The Site consisted of undeveloped woodlands before 1965 In 1965, Dennis Mitchell Industries (DMI) acquired a 58 acre portion of the Site, constructed a plant, and conducted manufacturing operations there until 1966

The Phase I (west of the railroad tracks) portion of the Site now consists of a large parking lot, a single story structure, a large communications tower, a water tower, the treatment systems and associated infrastructure, including the air stripper tower

The Phase II (east of the railroad tracks) portion of the Site consists of a large field surrounded on the north and east by woodlands that line Iron Branch Creek, with the west and south lined by the railroad that divides the two phases of the Site and an adjacent farm field respectively

History of Contamination

According to former DMI employees, the company manufactured shopping carts, children s car seats and strollers The manufacturing of these items included a metal plating process Waste water sludges generated during this process were stored in a lagoon

National Cash Register later known as NCR Corporation (NCR), purchased the 58-acre parcel and DMI plant in 1967 NCR manufactured mechanical cash registers at the facility from 1967 to 1975 and electronic terminal equipment from 1975 to 1980 Electroplating heat treating, enameling and degreasing operations were conducted from 1967 to approximately 1977 These operations were the primary sources of hazardous waste generated at the NCR plant

Trichloroethene (TCE) was used in the vapor degreasing process to remove cutting oils from metal parts manufactured at the Site TCE was stored in an above-ground, outdoor tank and piped into the process plant used in the degreasing units which were housed in concrete sumps In 1976, after plating operations had been curtailed, the sumps were cleaned filled, and covered with concrete EPA believes that the ground water contamination at the Site resulted from spills during the delivery of TCE and from the use of TCE in plant operations

From 1981 to 1987, NCR conducted investigations at the Site under the direction of the Delaware Department of Natural Resources and Environmental Control (DNREC) in order to determine the extent to which soils, ground water and the surface water of Iron Branch Creek were contaminated with chromium and other metals and volatile organic compounds (VOCs)

Chromium, TCE and several halogenated VOCs were detected in soils and ground water TCE and other halogenated VOCs were found in surface water samples

In September of 1981, the plating sludge which had been disposed of in the pit on the eastern property boundary was excavated and sampled The sludge was found to contain chromium and other metals used in the plating process Approximately 315 cubic yards of excavated sludge and wastes which remained in the concrete lagoons and pit were disposed under manifest in accordance with Resource Conservation and Recovery Act (RCRA) regulations In November of 1981, NCR sold the 58 acre parcel and plant to the First Omni Bank, National Association (subsequently known as First National Bank of Maryland and now known as M&T Bank)

Under the provisions of CERCLA, the Site was placed on the National Priorities List (NPL) in July of 1987

In March 1988, NCR entered into a Consent Order with DNREC to conduct a remedial investigation and feasibility study (RI/FS), and to implement an interim remedial measure (IRM) to prevent the migration of contaminated ground water beyond the property boundary In July 1988, NCR installed a ground water recovery well and an air stripper as part of the IRM (both of which were incorporated into Phase I of the subsequent 1991 ROD)

Basis for Taking Action

Past operations at the Site resulted in contamination occurring in various media at the Site Indicator chemicals (i e , chemicals observed at the site which are most likely to pose a threat to public health and the environment), and the media they apply to for the NCR Millsboro Site are summarized below

Surface Water

- Trihalomethanes (Chloroform Bromodichloromethane, Bromoform, and Dibromochloromethane),
- Trans-1 2-Dichloroethene (Trans 1 2 DCE)
- Trichloroethene (TCE)

Stream Sediments

- TCE
- Chromium

Soils

- TCE
- Chromium

Ground Water

- Trans-1,2-DCE
- Chloroform
- Tetrachloroethene (PCE)
- TCE
- Chromium

Air

- Volatile Organic Compounds (VOCs), primarily TCE

The primary chemical of concern at the Site is TCE, with high levels of chromium a secondary concern Monitoring data from recent years show only TCE and occasionally chromium above detection limits in known source areas

IV Remedial Actions

Remedy Selection

Based on the findings presented in the RI/FS, EPA Region III issued a ROD on August 12 1991 The selected remedial action provided for a phased approach to the ground water restoration The first phase required the installation of additional ground water recovery wells near the source area (Phase I) with onsite treatment using the air stripper constructed as part of the 1988 Interim Remedial Measure (IRM) and additional investigation of the down gradient area (Phase II) The 1991 ROD further required the installation of additional recovery wells and ground water treatment facilities for the Phase II area, if it was determined to be necessary by EPA after the investigation was complete The ROD also included provisions to treat ground water for chromium contamination and to treat air emissions from the air stripper if either were determined to be necessary by EPA

In July 1994, EPA determined that it would be necessary to remediate ground water in the Phase II portion of the Site EPA issued an Explanation of Significant Differences (ESD) on March 27, 1996 to allow for air sparging/soil vapor extraction (AS/SVE) of the ground water in lieu of the pump and treat system for the Phase II portion of the Site

Remedy Implementation

The Phase I pump and treat system (an air stripper and one recovery well) was installed in 1988 as an interim remedial action pursuant to an RI/FS Consent Order with DNREC On March 31, 1992, EPA Region III issued an Administrative Order (Docket No III-92-14-DC) to the NCR Corporation and the First Omni Bank National Association (subsequently known as First National Bank of Maryland, and now known as M&T Bank) to implement the remedial response actions in the 1991 ROD Additional recovery wells were installed pursuant to the ROD, which required the continued operation of the Phase I system, and also required ground water treatment in Phase II if the ongoing Remedial Investigation (RI) showed that it was warranted The system has been running since, successfully treating ground water Emissions from the air stripping tower have been consistently far below its permitted levels of TCE, and therefore, the in-line filtration for high levels of TCE was no longer deemed necessary, and is no longer in use Treated ground water is discharged back into the ground using on-site infiltration galleries located upgradient of the contaminated areas, thus creating a flushing effect

Construction of the Phase II AS/SVE system was completed in September 1996 The system was successful in reducing the TCE concentrations in ground water by approximately 92% in only one year of operation

Due to the success of the Phase II AS/SVE system, NCR proposed to EPA in a letter dated March 24, 1998 to augment the Phase I pump and treat system with an AS/SVE system EPA issued a second ESD on September 29 1998 to allow for Phase I remedy enhancement Construction of the Phase I AS/SVE system was completed in January 1999 The system has been in operation since, alongside the ground water pump and treat system

The 1991 ROD required quarterly ground water sampling Since the monitoring has demonstrated that the ground water contamination has been confined to the Site and has decreased in concentration quarterly sampling has been reduced to semiannual sampling

The ROD required institutional controls to restrict ground water use until clean up levels are achieved These institutional controls consisted of a ground water management zone and deed restrictions to prevent the use of ground water as a drinking water source In October 1999, DNREC established a ground water management zone (GWMZ) The GWMZ prevents the installation of public or domestic wells in not only the 80 acre parcels owned by M&T Bank and NCR, but also the parcel(s) on the eastern boundary of the site Since the GWMZ prevents the installation of a public or private drinking water well on or adjacent to the site the deed restrictions required by the ROD are redundant EPA issued a non significant change to the ROD on March 21, 2000, eliminating the requirement for deed restrictions A portion of the site is owned by M&T Bank and the other portion is owned by NCR both of which are Respondents to the order for the remediation of the Site These companies are currently able to control the use of the ground water

Semiannual sampling of residential wells and monitoring wells is conducted Surface water and sediment samples are collected from the Iron Branch Creek on an annual basis No Site related contaminants have been detected in the residential wells across Iron Branch at concentrations exceeding MCLs, suggesting that Iron Branch Creek acts as a hydraulic divide between the Site and the residences

System Operation/Operation and Maintenance

There is an approved operation and maintenance (O&M) plan in place that includes weekly and monthly O&M activities Site visit log sheets are completed by NCR's contractor during every site visit, as are weekly and monthly O&M checklists The systems are regulated with a series of alarms that will cause the system to shut down in the event of a malfunction and then contact the O&M contractor Air emissions from the air stripper tower of the treatment system have been consistently well below permitted levels, and the treated ground water discharge into the on site infiltration galleries is monitored and reported in compliance with the DNREC Underground Injection Control (UIC) program EPA is not privy to the costs associated with the ongoing O&M of the Site

V Progress Since the Last Review

The table below summarizes the progress at the NCR Site for the past five years

Table 2 Actions Taken Since the Last Five-Year Review

Issue	Recommendations/ Follow up Actions	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
One issue from previous FYR Although there has been a significant decrease in the TCE concentration in ground water throughout the site two of the monitoring points (W 30A and W 29A) indicate that the AS/VE system is ineffective along the eastern boundary	A modification to the system was installed in December 1999 Monitoring to determine the effectiveness of this modification will be conducted by the Respondents EPA and DNREC	Respondents EPA and DNREC	Issue identified 3/31/2000	Monitoring and operation of the treatment systems have continued since 2000 In addition two supplemental subsurface investigations were undertaken to identify the remaining source areas on site One such source area was located near well W 29A in January 2005	2000 – 2005 and January 2005
Vapor intrusion potential	Subsequent to the first FYR a vapor intrusion study was undertaken to determine the potential for the migration of vapors into the current or any potential future buildings on site	EPA	6/26/2003 (study completed) 8/20/2003 (risk conclusions reviewed)	Results of the vapor intrusion study showed that the highest predicted level of TCE in indoor air was near W 29A and was within EPA s acceptable risk range (at approx 10^{-5})	2003
In situ oxidation pilot study	A pilot test was conducted to determine the efficacy of destroying contamination remaining in the ground through the delivery of strong oxidants into the subsurface	Respondents EPA and DNREC	7/26/2004 (report date)	The pilot test indicated that in situ oxidation is feasible for addressing TCE contamination at the Site with only a slight increase in total chromium	2003

Issue	Recommendations/ Follow up Actions	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
Supplemental subsurface investigation	While the cleanup was completed for the majority of the Phase II area there have been occasional high detections of TCE in well WP 29a suggesting the presence of a remaining nearby source area This investigation sought to identify any remaining sources of TCE	Respondents EPA and DNREC	January 2005	The investigation to locate additional source areas near the remaining hotspots (specifically near Recovery Well 2 and near WP 29A) did find a previously unknown source area in the northeast corner of the Bank s property upgradient from WP 29A	2005

The ground water treatment and AS/SVE systems have been in operation since the last five year review, the report for which was signed on March 31, 2000 The amount of contaminants remaining in the subsurface at the Site has continued to decline with the operation of these systems (see Attachments 3a-d) In addition a supplemental subsurface investigation conducted in January 2005 was successful in locating a previously unknown source area near well MW-28A

Vapor intrusion modeling was undertaken for the Site in 2003 The results of the vapor intrusion model showed no significant risk associated with TCE vapors in either the existing structures on site, or in a potential future residential structure constructed overtop of the highest levels of TCE found on-site In addition the AS/SVE system operating at the Site would likely reduce the potential for vapor intrusion, as it is designed to be a closed system from which no volatilized TCE vapor escapes

In 2003, an *in-situ* oxidation pilot test was conducted in two locations on-site The results of the pilot test showed that *in-situ* oxidation had the potential to successfully augment the remediation at the Site, possibly reducing the O&M period to years instead of decades However some concern arose regarding the potential for the creation or mobilization of hexavalent chromium during treatment, and this method has not been further pursued to date

Sampling was conducted in March 2005 by an EPA contractor to support this Five-Year Review Report Specifically, samples of ground water, surface water, sediment, and residential drinking water were taken to compare to the ongoing monitoring results provided by the potentially responsible parties (PRPs) The preliminary results of the lab analyses show agreement with the PRPs' data that contamination is not migrating off-site, and that no contamination has reached the residential wells (A final report on this sampling effort will be available in the summer of 2005)

VI Five-Year Review Process

Administrative Components

The NCR Five-Year Review Team was led by Matthew T Mellon (EPA Remedial Project Manager (RPM)), with EPA technical support staff Bruce Rundell (Hydrogeologist) Dawn Ioven (Toxicologist), and Megan Dougherty (Community Involvement Coordinator (CIC)) Robert Asreen, DNREC Project Officer, assisted in the review as the representative of the support agency Tetra Tech, NUS (Boothwyn, PA) was contracted for technical support for this Five-Year Review

Community Involvement

A notice announcing that EPA was conducting a five year review for the Site was published in The *Downstate Shopper* a widely-distributed free local newspaper, on February 17 2005 On March 2, 2005, the EPA project manager met with one resident to discuss the Site and the ongoing monitoring program On March 21 2005 similar discussions were held with three more residents, and information packets were left at the four homes that are included in the ground water monitoring program

Document Review

A complete list of documents reviewed can be found in Attachment 4 Documents reviewed in the process of conducting this five year review included the last five year review the ROD, two ESDs, a non-significant change to the ROD, several documents related to a vapor intrusion study, the past five years' worth of annual and semi-annual monitoring and operations reports, and the data collected over the past five years The Applicable or Relevant and Appropriate Requirements (ARARs) listed in the 1991 ROD were also reviewed, and are presented here in Attachment 5 In addition, several work plans and comments submitted regarding work plans were reviewed

Data Review

The past five years' worth of monitoring and operations and maintenance data were reviewed In addition EPA contractors collected new samples for analysis The data collected show that TCE levels in ground water have been consistently decreasing

Site Inspection

Site visits were conducted on March 2, 2005 and March 21, 2005 During the first visit, a thorough tour of the treatment systems showed the air stripper and treatment building to be in good condition, with all systems functioning properly except for the main AS/SVE blower the shaft of which had just that week broken -Repairs were expected to take several months, as the part must be custom made, which takes six to ten weeks The required part was ordered in March 2005 Piping and access covers for the AS/SVE and ground water extraction systems were all in good condition and were well-marked EPA contractors collected ground water, surface water and sediment samples for analysis over two days during the second visit A number of new houses have been constructed, with more still under construction, in the vicinity of the Site, but no new houses have been built immediately downgradient of the Site ARARs

are being met for the Site, and the Remedial Action Objective (RAO) of restoring ground water to its beneficial use (as drinking water) is expected to be met once cleanup is complete

Interviews

Interviews were conducted with the previous EPA project manager with the contractor responsible for the operation and maintenance of the treatment systems, and with several residents whose drinking water wells are included in the Site s monitoring program No information provided suggested any problems with the Site or the treatment systems

VII Technical Assessment

- *Question A Is the remedy functioning as intended by the decision documents?*

Yes The remedy is functioning as intended by the 1991 ROD as amended by the 1996 and 1998 ESDs and the March 2000 Non Significant Change The system is still expected to ultimately achieve cleanup goals

- *Question B Are the exposure assumptions toxicity data cleanup levels and remedial action objectives (RAOs) used at the time of remedy selection still valid?*

Yes The toxicity data, cleanup levels and RAOs used have not changed and are still valid The Remedial Action Objective (RAO) of restoring ground water to its beneficial use (as drinking water) is expected to be met once cleanup is complete The cleanup levels associated with this RAO are the Maximum Contaminant Levels (MCLs) and non-zero Maximum Contaminant Level Goals (MCLGs) specified in the Safe Drinking Water Act (SDWA) which have not changed for the contaminants at this Site

- *Question C Has any other information come to light that could call into question the protectiveness of the remedy?*

No new information has been found that calls into question the protectiveness of the remedy

Technical Assessment Summary

According to the data reviewed, the site inspection, and the interviews, the remedy is functioning as intended by the ROD as modified by the ESDs There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy There have been no changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment, and there have been no changes to the standardized risk assessment methodology that could affect the protectiveness of the remedy There is no other information that calls into question the protectiveness of the remedy

VIII Issues

The table below summarizes the current issues at the NCR Site

Table 3 Issues

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
1 New source area confirmed action will be required to address it	N	Y
2 Repair main blower of air sparging system	N	N

A new source area was discovered near W-29A and W 28A in January 2005 NCR will submit a report summarizing these findings in the summer of 2005 Following that, discussions of options for addressing this source area will occur and a decision will be made This source area will require an action in order to address it, as it lies outside of the bounds of the current treatment system configuration Provided that action is taken, long-term protectiveness is still expected to be achieved

The shaft of the main AS/SVE blower broke in late February 2005 Repairs were expected to take several months, as the part must be custom made which takes six to ten weeks The required part was ordered in March 2005, and the repairs are expected to be completed during the summer of 2005 Since the ground water pump and treat system continued to operate while the AS/SVE system was out of service, this will not affect the short term or long term protectiveness of the remedy

IX Recommendations and Follow-up Actions

Although there has been a significant decrease in the TCE concentration in ground water throughout the Site, two of the monitoring points (W-30A and W-29A) indicate that the AS/VE system is ineffective along the eastern boundary A new source area was discovered in this area in January 2005 Monitoring to determine the effectiveness of the treatment systems will continue to be conducted by the Respondents, EPA, and DNREC

Table 4 Recommendations and Follow-up Actions

Issue	Recommendations and Follow up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
1	Develop strategy for new source area	EPA Respondents	EPA DNREC	By March 2006	N	Y
2	Repair main blower	Respondents	EPA DNREC	Summer 2005	N	N

X Protectiveness Statement

The remedy is considered protective of human health and the environment in the short term as the ground water is captured on site and treated Any ground water leaving the Site meets the drinking water standards for TCE before entering the Iron Branch Creek Surface water and sediment samples are collected from Iron Branch Creek annually Domestic wells on the other side of the Iron Branch Creek are sampled annually for TCE The State of Delaware has designated a Ground Water Management Zone for the Site which prevents the future installation of ground water extraction wells in the vicinity of the Site

Long-term protectiveness of the remedy is expected to be achieved through the continued operation of the treatment systems Some additional actions will be necessary to address the source area recently discovered in the vicinity of the northeast corner of the Phase I area of the Site Sampling and monitoring of ground water, surface water, sediments, and domestic wells is expected to continue until cleanup goals are met

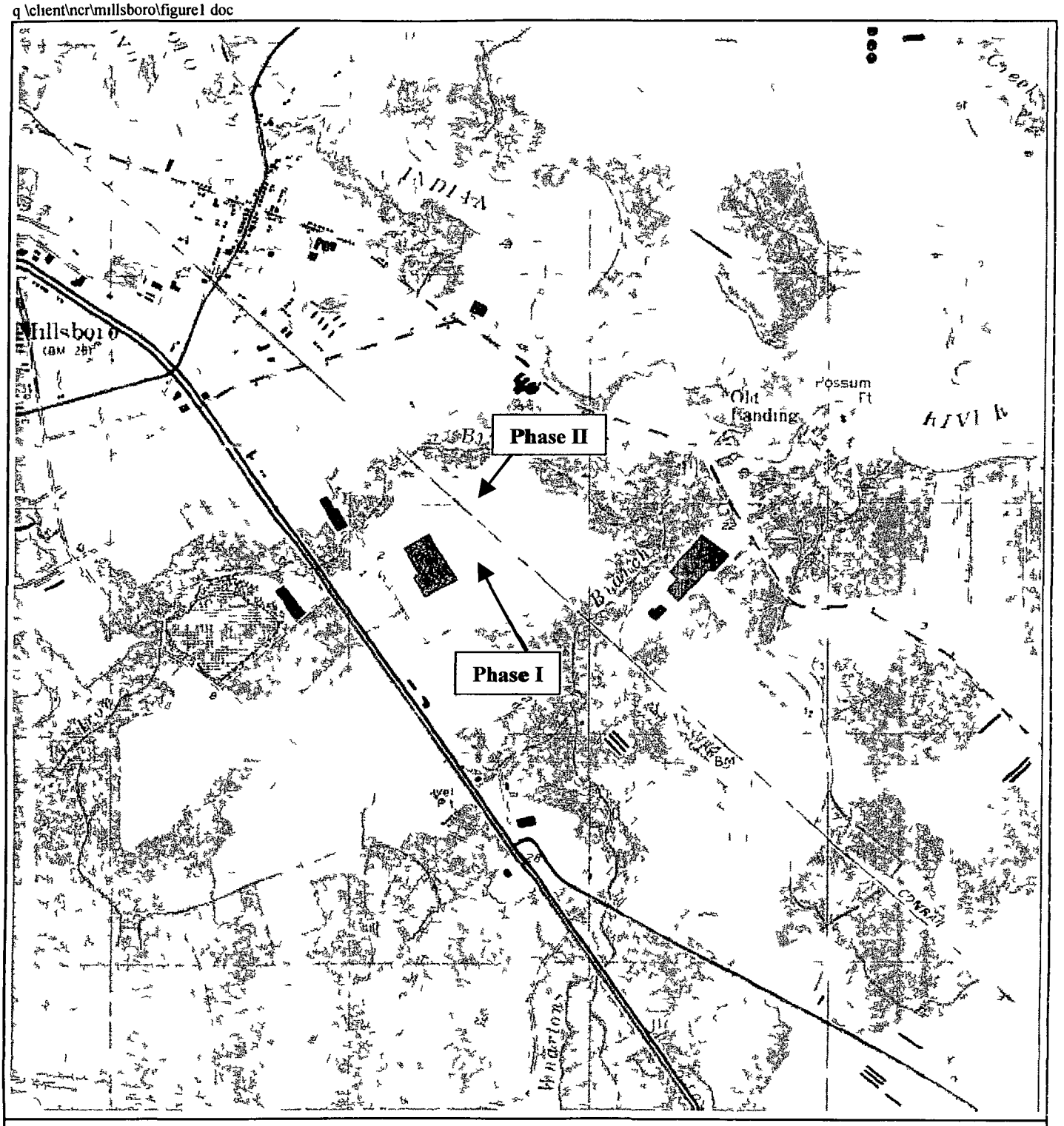
XI Next Review

EPA will conduct another five year review within five years of the completion of this five-year review report The completion date is the date of the signature on the front of this report

ATTACHMENTS

ATTACHMENT 1 Site Location Map

q \client\ncr\millsboro\figure1 doc



Reference

7 5 Minute Series Topographic Quadrangle
Millsboro Delaware
Photorevised 1981 Scale 1 24 000

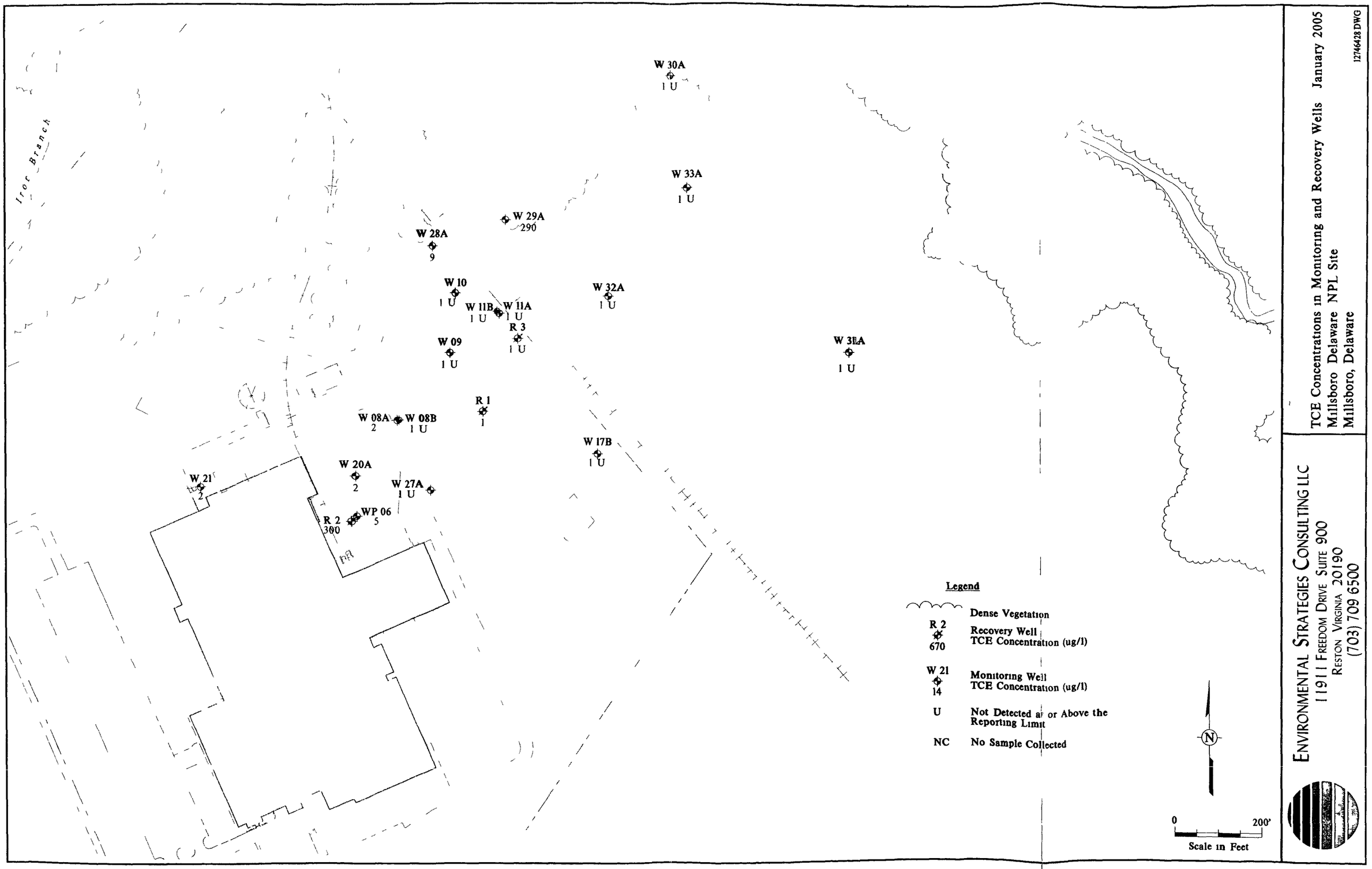
Quadrangle Location

0 2000 4000
Scale in Feet

ENVIRONMENTAL STRATEGIES CONSULTING LLC
11911 FREEDOM DRIVE SUITE 900
RESTON VIRGINIA 20190
703 709 6500

Site Location
Former NCR Corporation facility
Millsboro, Delaware

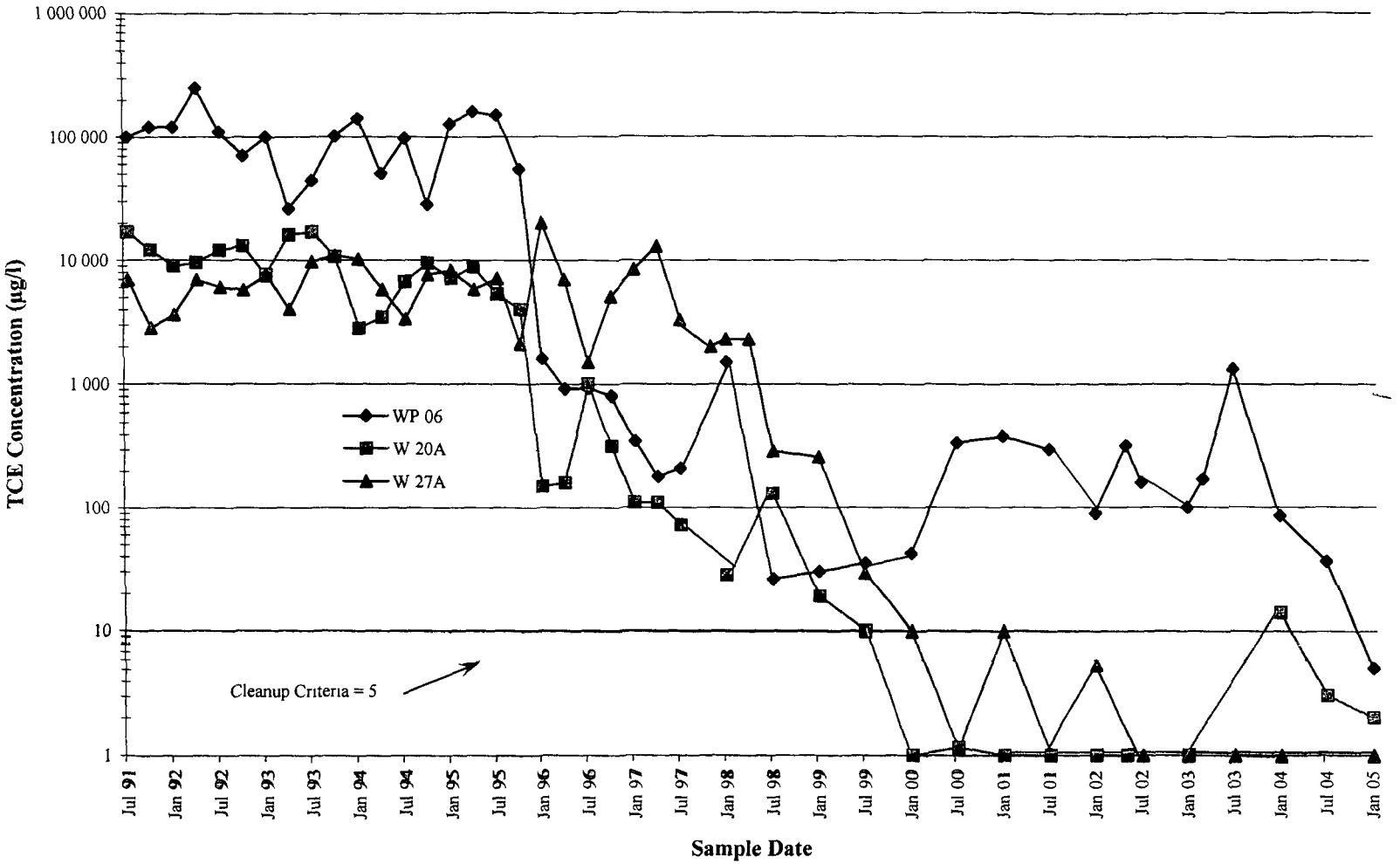
ATTACHMENT 2 Site Plan



TCE Concentrations in Monitoring and Recovery Wells January 2005
Millsboro Delaware NPL Site
Millsboro, Delaware

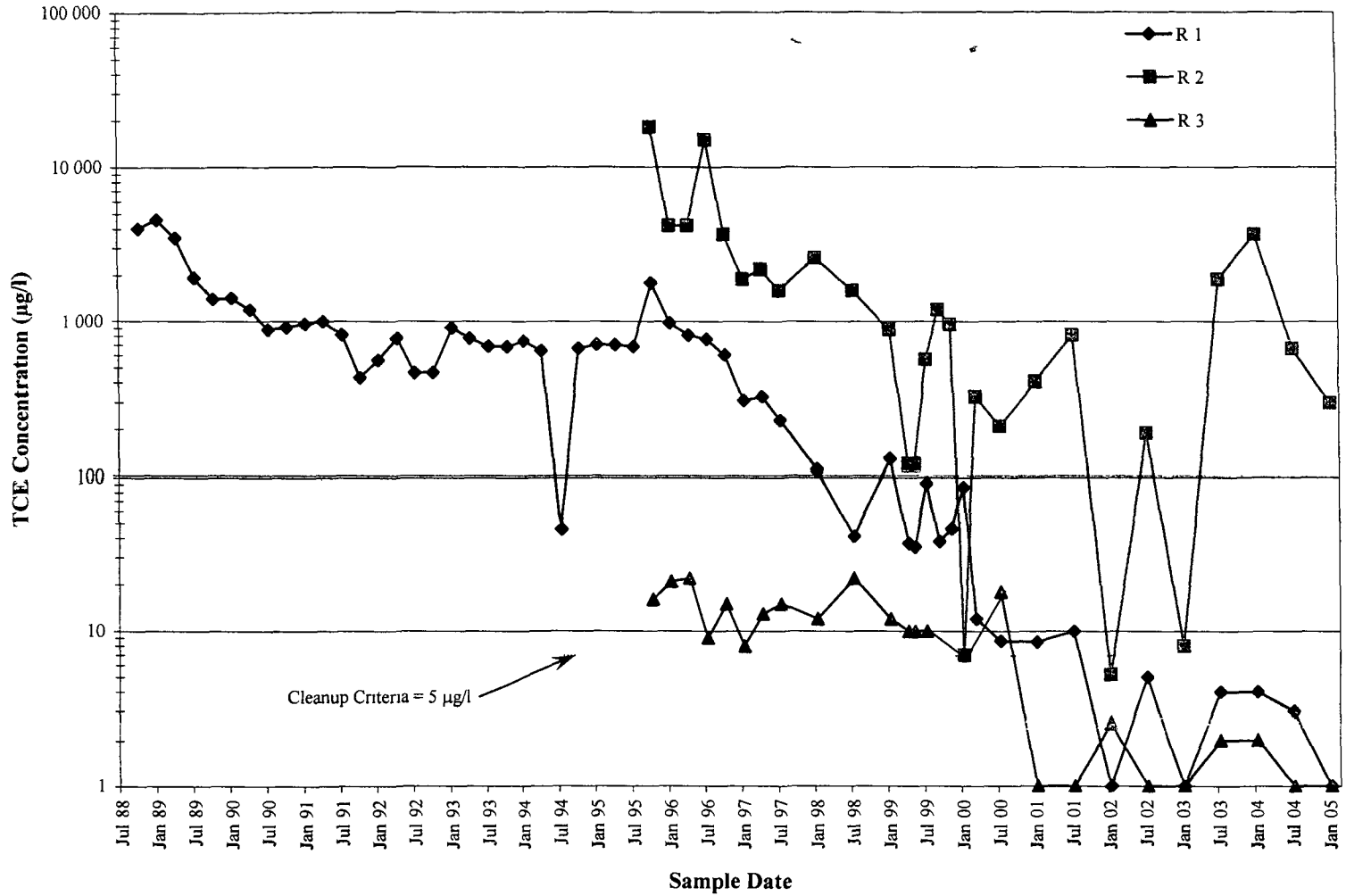
1274628.DWG

ENVIRONMENTAL STRATEGIES CONSULTING LLC
11911 FREEDOM DRIVE SUITE 900
RESTON VIRGINIA 20190
(703) 709 6500



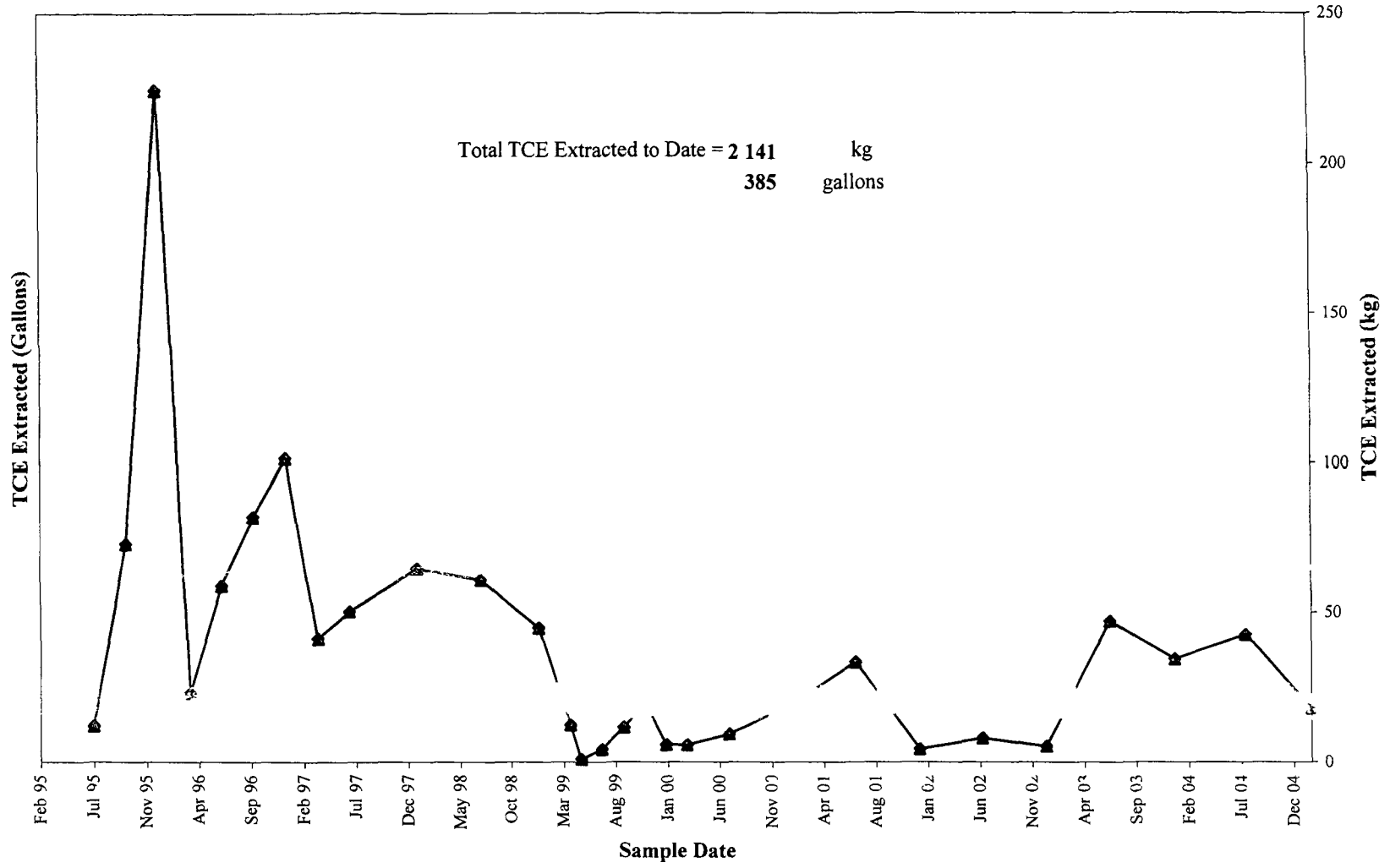
ENVIRONMENTAL STRATEGIES CONSULTING LLC
11911 FREEDOM DRIVE SUITE 900
RESTON VIRGINIA 20190

Historic Concentration of TCE in Monitoring Wells
WP 06 W 20A and W 27A
Millsboro Delaware NPL Site



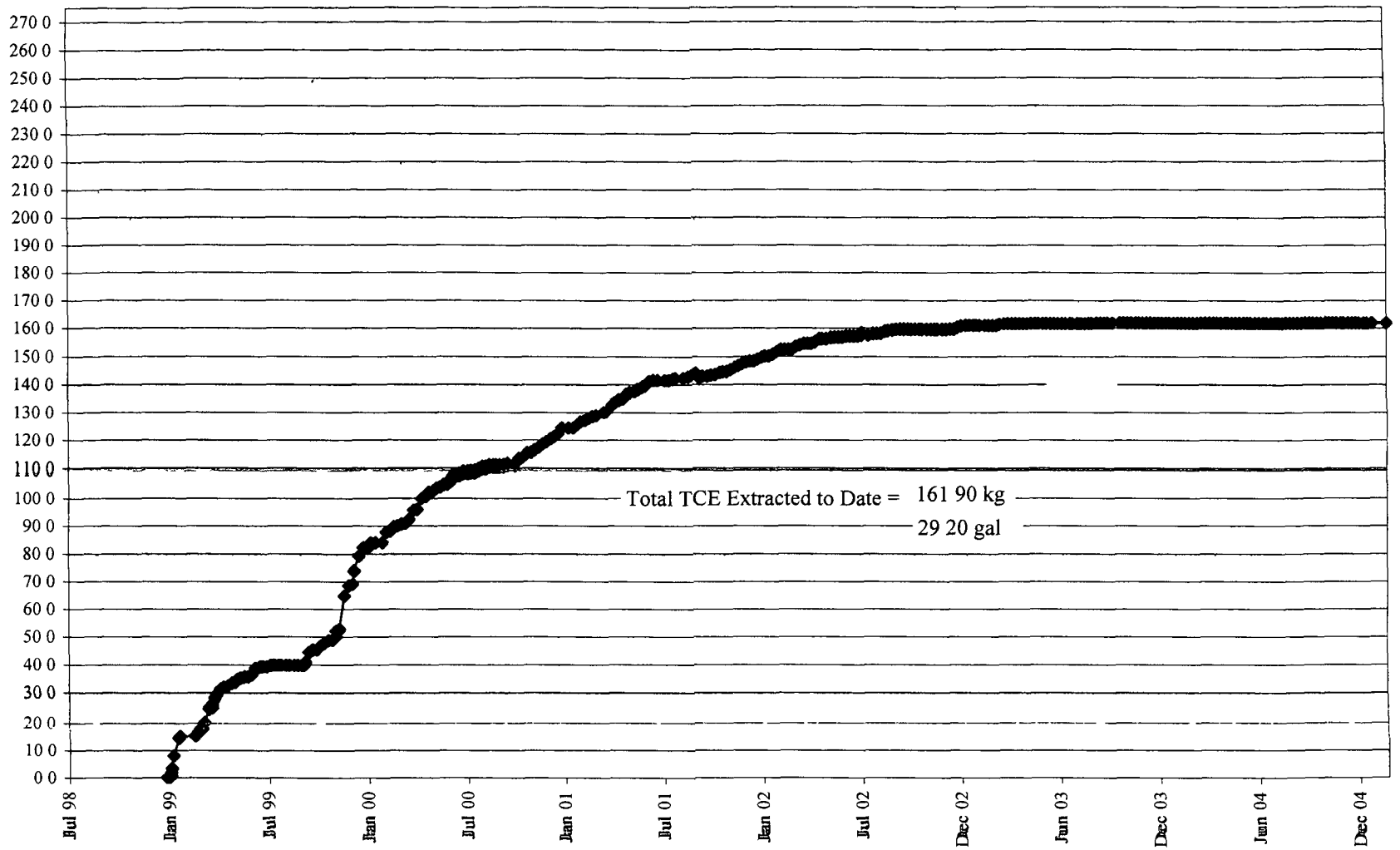
ENVIRONMENTAL STRATEGIES CONSULTING LLC
11911 FREEDOM DRIVE SUITE 900
RESTON VIRGINIA 20190

Historic Concentration of TCE in Recovery Wells R 1 R 2 and R 3
Millsboro Delaware NPL Site



ENVIRONMENTAL STRATEGIES CONSULTING LLC
11911 FREEDOM DRIVE SUITE 900
RESTON VIRGINIA 20190

TCE Extracted from the Recovery Wells
through January 2005
Millsboro Delaware NPL Site



ENVIRONMENTAL STRATEGIES CONSULTING LLC
11911 FREEDOM DRIVE SUITE 900
RESTON VIRGINIA 20190

Mass of TCE Recovered by the Phase I AS/VE System
Millsboro Delaware NPL Site

ATTACHMENT 4 List of Documents Reviewed

NCR Corporation Superfund Site Record of Decision U S EPA Region III August 12 1991

Administrative Order No III 92 14 DC In The Matter Of NCR Corporation (Millsboro Plant) Superfund Site Millsboro Sussex County Delaware NCR Corporation and First Omni Bank NA Respondents March 31 1992 [As modified by Modifications No 1 4]

Explanation of Significant Differences No 1 from Record of Decision NCR Corporation Superfund Site Millsboro Sussex County Delaware U S EPA Region III 1996

Explanation of Significant Differences No 2 from Record of Decision NCR Corporation Superfund Site Millsboro Sussex County Delaware U S EPA Region III 1998

Operations & Maintenance Plan for the [NCR] Millsboro Delaware NPL Site Revision 1 1 Environmental Strategies Corporation June 7 1999

Memorandum of Agreement Department of Natural Resources and Environmental Control [Delaware] Between Division of Air and Waste Management and Division of Water Resources For NCR Corporation Superfund Site Millsboro Sussex County Delaware October 1999

NCR – Non significant Change to 1991 Record of Decision U S EPA Region III March 21 2000

Five Year Review Report NCR Corporation Superfund Site Millsboro Delaware U S EPA Region III March 31 2000

Various Documents Related to Vapor Intrusion U S EPA Region III and Environmental Strategies Corporation 2003

Potassium Permanganate In Situ Chemical Oxidation Pilot Test Report [NCR] Millsboro NPL Site Millsboro Delaware Environmental Strategies Consulting LLC July 26 2004

Annual Report for the [NCR] Millsboro Delaware NPL Site April 2001 – April 2002 Environmental Strategies Corporation June 4 2002

Annual Report for the [NCR] Millsboro Delaware NPL Site April 2002 – April 2003 Environmental Strategies Corporation July 7 2003

July 2003 Semiannual Report of Groundwater Monitoring and Performance of the Phase I and II Systems at the [NCR] Millsboro Delaware NPL Site Status Report No 47 Environmental Strategies Consultants LLC October 31 2003

January 2004 Semiannual Report of Groundwater Monitoring and Performance of the Phase I and II Systems at the [NCR] Millsboro Delaware NPL Site Status Report No 48 Environmental Strategies Consultants LLC June 3 2004

Annual Report for the [NCR] Millsboro Delaware NPL Site April 2003 – April 2004 Environmental Strategies Consultants LLC November 17 2004

July 2004 Semiannual Report of Groundwater Monitoring and Performance of the Phase I and II Systems at the [NCR] Millsboro Delaware NPL Site Status Report No 49 Environmental Strategies Consultants LLC November 18 2004

January 2005 Semiannual Report of Groundwater Monitoring and Performance of the Phase I and II Systems [NCR] Millsboro Delaware NPL Site Status Report No 50 Environmental Strategies Consulting LLC, May 5 2005

ATTACHMENT 5 Applicable or Relevant and Appropriate Requirements (ARARs)

[From 1991 Record of Decision]

ACTION-SPECIFIC ARARS

I) WATER

Clean Water Act's (33 USC Section 1251) (CWA) National Pollutant Discharge Elimination System Requirements (enforceable for all discharges into surface water 40 CFR Part 122) Discharge standards are established to regulate the discharge into navigable waters in order to restore and maintain the chemical, physical and biological integrity of the water Discharge limitations will be established prior to the start of remedial actions and the discharge will be monitored to ensure compliance with the limitations

D*elaware Water Quality Standards (Stream Quality Standard Section 10)* Standards are established in order to regulate the discharge into waters of the state in order to maintain the integrity of the water Discharge limitations for volatile organic compounds and chromium will be established during the design phase prior to start of remedial action and discharge will be monitored to ensure compliance with the limitations

Delaware Environmental Protection (Title 7 Delaware Code Chapter 60 Section 6010 – Regulations Governing The Construction Of Water Wells All wells will be installed and maintained according to state procedures for permitting, construction and abandonment

II) AIR

Delaware Regulations Governing the Control of Air Pollution (7 Delaware Code Chapter 60 Section 6003) Regulation 2, Section 2 4 sets forth the requirement that a permit is necessary to operate an air stripper if emissions will exceed 2 5 lbs /day If it is determined during the design phase that the air stripper may exceed the 2 5 lbs /day emission rate then the substantive requirements of the regulation shall be met In addition, the emissions from the air stripper must meet the ambient air quality standards set forth in Regulation 3 Of 7 Delaware Code Chapter 60 Section 6003

National Ambient Air Quality Standards of the Clean Air Act 42 USC Section 7401 (40 CFR Part 50) Provides air quality standards for particulate matter and lead Requirements shall be adhered to during excavation of soils

III) HAZARDOUS WASTE

The Solid Waste Disposal Act commonly referred to as the Resource Conservation and Recovery Act of 1976 as amended by the Hazardous and Solid Waste Amendments of 1984 (RCRA) EPA will determine whether the wastes generated from the mobile carbon adsorption unit and/or the waste sludges generated from the coagulation and filtration process for chromium treatment at

the site constitute "hazardous waste" as that term is used in 40 CFR Part 261 If the wastes generated from the carbon adsorption process and/or the coagulation and filtration process are determined to be hazardous wastes the requirements for land disposal restrictions process vent emissions, equipment leak standards surface impoundments generating and transporting waste under Subtitle C of RCRA, as set forth below shall be complied with

Standards Applicable to Generators of Hazardous Waste (40 CFR PART 262)(7 Delaware Code Chapter 63 Part 262 2) Establishes standards for generators of hazardous wastes including waste determination manifests and pre transport requirements This standard will pertain to wastes generated as a result of chromium treatment and volatile organic contaminant treatment

Standards Applicable to Transporters of Hazardous Waste (40 CFR Part 263)(7 Delaware Code Chapter 63 Part 263) Sets forth regulations for off site transporters of hazardous waste in the handling transportation and management of the waste This regulation will apply to any company contracted to transport hazardous material from the site

Standards Applicable for Owners and Operators of Hazardous Waste Treatment Storage and Disposal Facilities (TSDF) (40 CFR Part 264)(7 Delaware Code Chapter 63 Part 264) Sets forth regulations for owners of facilities for the treatment, storage and disposal of hazardous waste This will apply to any of the owners and operators of treatment storage, or disposal facilities where wastes generated at the site may be taken to

• *Process Vent Emissions* (40 CFR SS 264 1030 1033, 265 1032 1033) Process waste standards apply to waste management units at CERCLA sites that include specific equipment that manage hazardous waste with annual average total organics concentrations of GT10ppm by weight This will apply to the use of the air stripper The total organic emissions must be reduced below 1 4 kg/h and 2 8 mg/yr or installation of a control device that achieves 95 percent overall reduction at the point of release will be required

Equipment Leak Standards (40 CFR SS 264 1050 62 265 1050 62) These standards apply to emissions from specified sources at CERCLA sites where the equipment contains or contacts hazardous waste with annual average total organics concentration of gt10 percent by weight This will apply to the operation of the air stripping unit All leaks must be located and repaired and control equipment and monitoring devices must be installed to meet the design and operating requirements for closed vent systems

Corrective Action Program Requirements in 40 CFR Subpart F Section 264 90-264 101 that address ground water monitoring during remedial action where the disposal of RCRA hazardous wastes occurs at an existing area of contamination Monitoring of ground water will occur in order to ensure that the clean up levels (MCLs and non zero MCLGs) are achieved

• *Surface Impoundments* (40 CFR 264 220-264 249 SUBPART K) (7 DELAWARE Code Chapter 63 Part 264) The use of existing surface impoundments at a CERCLA site may require specific retrofitting requirements or a waiver or exemption must be obtained from EPA if RCRA

hazardous waste will be disposed of in the units The use of the existing concrete basins (lagoons) at the site for temporary storage of the recovered ground water during remedial action will meet these requirements prior to use of the existing basins (lagoons)

Land Disposal Restrictions (40 CFR PART 268 1 268 50) Establishes that movement of excavated materials containing hazardous waste to new locations and placement in or on land would trigger land disposal restrictions If soil and sediment are moved during remedial action and are determined to be RCRA wastes the excavated material shall be properly disposed of or treated as required by the regulations

IV) OSHA

Occupational Safety and Health Administration (OSHA) Requirements for Workers at Remedial Action Sites (29 CFR Part 1910 120) The regulation specifies the type of safety equipment and procedures to be followed during site remediation All appropriate safety equipment will be on site and appropriate procedures will be followed during treatment activities

CHEMICAL SPECIFIC ARARS

I) WATER

Safe Drinking Water Act (SDWA) AS AMENDED IN 1986 (42 USC S 300(F)) Maximum contaminant levels (MCLs) and non-zero maximum contaminant levels goals (MCLGs) contained in 40 CFR Part 141 and 143 provides standards for 30 toxic compounds, including 14 compounds adopted as RCRA MCLs for public drinking systems The MCLGs are non enforceable health goals and are set at levels that would result in no known or anticipated adverse health effects with an adequate margin of safety The MCL and non zero MCLGs are used to determine the levels to which ground water should be remediated During the predesign study EPA will determine which MCLs and non zero MCLGs for volatile organic compounds and chromium must be met

SDWA Underground Injection Control Program (UIC) (40 CFR Parts 144 145, 146, 147) The UIC program regulates underground injections into five designated classes of wells The construction, operation or maintenance of an injection well must not result in the contamination of an underground source of drinking water at levels that violate MCLs or otherwise adversely affect the health of persons The discharge from the infiltration gallery will meet the substantive requirements of the UIC program which will be determined in coordination with the state and federal UIC programs

Delaware Regulations Governing Underground Injection Control (7 Delaware Code Ch 60) Shall be complied with as they relate to the infiltration gallery

Clean Water Act (33 USC S 1251) *Federal Ambient Water Quality Criteria* (AWQC) (40 CFR Part 122) Contaminant levels regulated by AWQC are provided to protect human health from exposure to unsafe drinking water, from consuming aquatic organisms (primarily fish) and from

fish consumption alone The promulgated values shall be compared to maximum contaminant levels to determine volatile organic compounds (VOC) and chromium treatment requirements prior to discharge into surface water

Delaware Surface Water Quality Standards Of February 1990 (Section 9 3(A)(I) and 9 3(B)(I) Quality criteria are provided to maintain surface water of satisfactory quality consistent with public health and recreational purposes the propagation and protection of fish and aquatic life and other beneficial uses of water The promulgated values for the volatile organic compounds and chromium will be compared to determine treatment requirements prior to discharge to surface water

II) AIR

Clean Air Act (42 USC S 7401) *National Ambient Air Quality Standards* (40 CFR Part 50) Standards have been established for several compounds The promulgated values for each compound specified during the pre design study would be compared to maximum contaminant levels and the discharge to ambient air would not exceed these promulgated values

LOCATION SPECIFIC ARARS

I) WATER/WETLANDS

Procedures for Implementing the Requirements of the Council on Environmental Quality on the National Environmental Policy Act (40 CFR Part 6 Appendix A) *EPA's Policy for Carrying Out the Provisions of Executive Order 11990* (Protection of Wetlands) No activity that adversely affects a wetland shall be permitted if a practicable alternative that has less effect is available If there is no other practical alternative impacts must be mitigated Impacts on wetlands have been considered during the feasibility study and will continue to be evaluated during pre design and the design phases

Delaware Wetlands Act of 1973 (Title 7 Chapter 66 Section 6607) Revised June 29 1984 This act requires activities that may adversely affect wetlands in Delaware to be permitted Permits must be approved by the county or municipality having jurisdiction The effects on local wetlands will continue to be evaluated during the pre design phase of remediation

TO BE CONSIDERED

I) WATER

Ground Water Protection Strategy of 1984 (EPA 440/6 84-002) Identifies ground water quality to be achieved during remedial actions based on aquifer characteristics and use The EPA aquifer classification will be taken into consideration during design and implementation of the treatment remedy

EPA Policy for Ground Water Remediation at Superfund Sites (Directive No 9355 4 03) This

policy recommends approaches to ground water remediation using a pump and treat system This policy will be considered during the ongoing evaluation of the remedial action

II) AIR

EPA Policy for Control of Air Emissions from Superfund Air Strippers at Superfund Sites (Directive No 9355 0-28) This policy establishes guidance on the control of air emissions from air strippers used at Superfund sites for ground water treatment and establishes procedures for implementation This guidance will be considered during design and implementation of the treatment remedy

III) ECOLOGICAL

US Endangered Species Act of 1973 Actions taken at the NCR Millsboro Site must not threaten endangered or threatened species or its critical habitat (50 CFR Section 402 01